
APPENDIX G
Construction Specifications

**UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY
REGION IX**

**SPECIFICATIONS FOR THE
I-215 AND BNSF UNDERCROSSING
CONTRACT NO. 68-W-98-225/WA NO. 014-RDRD-09J5**

**PREPARED BY
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SACRAMENTO, CA
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SECTION 01001

SPECIFICATION STRUCTURE

1.0 GENERAL

1.1 FORMAT

- A. This specification is organized on the format promulgated by the Construction Specification Institute. (CSI Format)
- B. This format assigns permanent numbers to all Divisions and Sections and so far as possible assigns all products, processes, activities and construction requirements permanent places in the specifications. A number is assigned which will not change from specification to specification.
- C. Division, Section and Subsection numbers which are not required are omitted from the Specification.
- D. Reference to an Article is a numbered clause in the General Conditions.

1.2 INDEX

- A. All Sections required for a complete Contract appear in the index. Sections not required are omitted.
- B. Bidders and Contractors should check Sections present against the index to assure the presence of all required Sections of the Contract.

1.3 ARRANGEMENT

- A. The Project Manual is organized as follows:
 - 1. Procedural and legal documents in the opening Sections.
 - 2. Specifications in Divisions number 1 to 16.
- B. No attempt has been made in these specifications or plans to segregate work covered by any trade or subcontractor under one specification. Such segregation and establishment of subcontract limits shall be solely a matter of specific agreement between the Contractor and his subcontractors and shall not be based upon an inclusion, segregation or arrangement in or of these specifications. The Contractor and subcontractor in each case is warned that work included in any subcontract may be divided between several general specifications and that each general specification or subhead of the Technical Specifications may include work covered by two or more subcontracts in excess of any one subcontract.
- C. The Contractor shall be responsible for all work shown or specified, regardless of location in the Contract Documents.

1.4 LANGUAGE

- A. These Specifications are written in imperative and abbreviated form.
- B. This imperative language of the technical sections is directed at the Contractor, unless specifically noted otherwise.
- C. Incomplete sentences shall be completed by inserting "shall", "the Contractor shall", and "shall be", and similar mandatory phrases by inference in the same manner as they are applied to notes on the drawings. The words "shall be" shall be supplied by inference where a colon (:) is used within sentences or phrases.
- D. Except as worded to the contrary, fulfill (perform) all indicated requirements whether stated imperatively or otherwise.

*** END OF SECTION ***

SECTION 01010

SUMMARY OF WORK

1.0 GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. Coordination: Section 01041

1.2 SCOPE OF WORK

A. The work covers construction work specifically shown on the Contract Drawings and described herein.

B. The work includes the following:

- Supply and installation of approximately 240 feet of 36-inch diameter steel casing by the Jack-and-Bore Method to cross underneath Interstate 215 and the Burlington Northern and Santa Fe Railway Company (BNSF) railroad tracks in San Bernardino, California. This work task includes the design and construction of the jacking and receiving pits.
- Supply and installation of approximately 195 feet of 36-inch steel casing by the Cut-and-Cover Method to cross underneath the CalTrans right-of-way on the east side of Interstate 215.
- Supply and installation of approximately 435 feet of 20-inch diameter DIP inside of the 36-inch steel casing.
- Supply and installation of approximately 60 feet of 20-inch diameter DIP to connect both ends of the pipeline installed under this contract with previously installed 20-inch diameter DIP pipelines.
- Removal of approximately 75 feet of 20-inch diameter DIP (installed in February 2003). [The purpose is to remove the uncased water pipe and replace it with 20-inch water pipe encased in 36-inch steel casing to support future widening of interstate 215]. It is permissible for the Contractor to reuse this piping. If not re-used, the Contractor is responsible for disposal.
- Supply and installation of the following associated assemblies and fittings:
 - One 8-inch diameter blow off valve assembly;
 - One 2-inch diameter combination air-vacuum air-release valve assembly;
 - One 20-inch diameter DIP 45 degree bends;
 - Two 20-inch diameter DIP 22.5 degree bends; and

- One 20-inch diameter butterfly valve.
- Contractor shall be responsible for all settlement monitoring, and submit a settlement monitoring plan prior to start of work.
- Preparation and submittal of project plans in accordance with the Contract Documents.

1.3 CONTRACTOR'S DUTIES

- A. Except as specifically noted, provide and pay for:
 - 1. Labor, materials and equipment.
 - 2. Tools, construction equipment, machinery and fuel.
 - 3. Water, heat, and utilities required for construction.
 - 4. Other facilities and services necessary for proper execution and completion of work.
- B. Pay legally required sales, consumer use and other taxes as may be required by law.
- C. Give required notices.
- D. Comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which bear on performance of work.
- E. Promptly submit written notice to Engineer of observed variance of Contract Documents from legal requirements. It is not Contractor's responsibility to make certain that drawings and specifications comply with codes and regulations.
- F. Enforce strict discipline and good order among employees.
- G. Do not employ:
 - 1. Unfit persons.
 - 2. Persons not skilled in assigned task.

1.4 CONTRACTOR FURNISHED

- A. Labor, materials and equipment required for the project.
- B. Water for construction, fire protection and all field offices.
- C. All gates, barricades, fences, handrails, guardrails, and security required by the Contract or by laws and regulations.
- D. Sanitary facilities adequate for all workers and complying with all codes and regulations.
- E. Shelter and drying facilities for workmen.

- F. Guards, marks, shields, protective clothing, rain gear, and other equipment required by law, ordinance, labor contracts, OSHA and other regulations for the maintenance of health and safety.
- G. First Aid Kits and equipment required by law and regulations.

1.5 PERMITS AND LICENSES

- A. The Owner shall secure and pay for all Department of Fisheries and Game permits, State Highway encroachment permits, railroad encroachment permits, and shall pay the fee prescribed for all permanent franchises, permits, licenses and easements.
- B. The Contractor shall acquire and pay for NPDES Permit, local business licenses and for all specialty permits such as electrical permits, plumbing permits, transportation permits, burning permits, wage and hour regulations permits, and all other permits of a temporary nature relating to the construction of the project.

1.6 TYPE AND EXTENT OF WORK

- A. All work incidental and necessary to the completion of the work described herein and shown on the drawings shall be completed under the bid items listed in the Bid Form and no other compensation will be allowed.

1.7 WORK UNDER SEPARATE CONTRACTS

- A. Bidders are cautioned to anticipate potential delays due to construction by others under separate contracts. In addition, bidders are cautioned to anticipate the effect of this construction work on the General Conditions in the areas where one or more contracts are scheduled. Changes in soil or water conditions because of construction work performed by others under these separate contracts shall not be the basis for a claim to the Owner.
- B. Contractors shall include allowances in their prices bid to allow for the above factors, delays, inconveniences, etc., and these items will not be a basis for a claim for a time extension and/or additional compensation.
- C. At locations where these separate contracts are joined to form a completed system, the Contractor last completing the work at the point of connection, as determined by the Engineer, shall be responsible for making said connection.

1.8 OWNER FURNISHED PRODUCTS

- A. This Section Not Used

1.9 CONSTRUCT WORK IN STAGES

- A. This Section Not Used

1.10 USE OF PREMISES

A. Limitation:

1. The Contractor shall confine his apparatus, storage of materials, and construction operations to such limits as may be directed by the Owner, and shall not unreasonably encumber the premises with his materials.
2. The Contractor shall enforce any instructions of the Owner regarding signs, advertising, fires, danger signals, barricades, and smoking, and shall require all persons employed on the work to comply with all building, post or institutional regulations while on the premises.
3. The Contractor shall not permit any part of any structure to be loaded with a weight that will injure its safety.

B. Confine operations at site to areas permitted by:

1. Laws.
2. Ordinances.
3. Permits.
4. Contract Documents.
5. Right-of-Way.

1.11 STORAGE OF MATERIALS AND EQUIPMENT

A. Materials or equipment shall not be stored where it will interfere with the free and safe passage of public traffic.

1. Equipment and materials storage areas shall be approved by the Engineer.
2. The Contractor shall remove all equipment and other obstructions from that portion of the roadway to be opened for use by public traffic at the end of each day's work and at other times when construction operations are suspended for any reason.
3. Materials or other obstructions shall not be placed within 20 feet of fire hydrants, which shall at all times be readily accessible to the fire department, nor within ten feet of United States mailboxes.
4. No storage of materials or equipment on railroad property.

*** END OF SECTION ***

SECTION 01025

MEASUREMENT AND PAYMENT

1.0 GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. Bid Form

1.2 MEASUREMENT OF PAY QUANTITIES

- A. The Engineer shall make all measurements, and determine all quantities and amounts of work done under the Contract. At the time measurements are made for quantity determinations, the Contractor or his authorized assistant shall be present to verify such measurements. From quantity figures so ascertained, it will be the Contractor's responsibility to prepare a monthly periodical estimate of the work accomplished to date. This estimate shall be submitted to the Engineer each month for this review and check not later than the date established at the preconstruction conference. The form of such monthly estimates to be subject to the approval of the Engineer.

1.3 ESTIMATED QUANTITIES

- A. The estimated quantities shown in the bid forms are estimates only, being given only as the basis for the comparison of bids, and the Owner does now warrant, expressly or by implication, that the actual amount of work will correspond therewith. The right to increase or decrease the amount of any class or portion of the work, or to make changes in the work required as may be deemed necessary is reserved by the Owner as provided elsewhere in these specifications. The basis of payment will be the actual unit bid items of work performed and measured in accordance with the contract. All prospective bidders should note that certain bid items may be included in the Bid Form to establish a unit price should the use of those items become necessary during construction. Allowance will not be made for loss of anticipated profits or additional compensation should the use of these items be deemed unnecessary.

1.4 PAYMENT FOR LUMP SUM ITEMS

- A. Measurement shall be for work actually completed during the pay period. Payment will be determined based upon approved schedule of values on a percent completed basis.
- B. Work is listed on the bid form.

1.5 PAYMENT FOR UNIT PRICE ITEMS

- A. This section not used

1.6 DESCRIPTION OF BID ITEMS

A. This section not used

1.7 WATER LINE BID ITEMS

A. This section not used

1.8 PAVING AND SURFACING RESTORATION BID ITEMS

A. This Section Not Used

1.9 CONCRETE CUTTING

A. This Section Not Used

END OF SECTION

SECTION 01028

CHANGE ORDER PROCEDURE

1.0 GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Changes: Article 13 General Conditions
- B. Measurement and Payment: Section 01025
- C. Construction Schedule: Section 01310

1.2 INITIATION OF CHANGES

- A. The Owner may order, in writing, changes in the specifications, drawings, materials, timing, location or other alteration of the work as he may deem advisable.
- B. Upon receipt of a change order, signed by the Owner, the Contractor shall immediately cease any actions that may be in conflict and shall proceed with the work directed by the change order.

1.3 PROCEDURE

- A. The Owner or the Engineer may initiate a request for change order cost proposal.
- B. Upon receipt of such a request, the Contractor shall promptly prepare a cost and time proposal, in as much detail as the Owner may request, and forward that proposal to the Engineer and shall immediately cease any actions that may be in conflict if so requested by the Engineer.
- C. The Contractor may at his option and initiative, propose changes which he may deem practical and/or advantageous to himself and the Owner.
- D. If an equitable adjustment can be negotiated, the Owner shall prepare and both Owner and Contractor shall sign a change order in the amount and terms agreed.

1.4 COST REIMBURSEMENT (FORCE ACCOUNT)

- A. If a change order cannot be negotiated or if there is insufficient time to follow the normal procedures of Article 13.3, the Owner may issue a Notice to Proceed for Cost Reimbursement with a request for lump sum cost proposal.
- B. The Notice to Proceed will have the same contractual status as a change order.
- C. The Contractor may proceed promptly with the changed work directed by the Notice to Proceed and shall maintain records as are required by Article 13.3 of the General Conditions.

- D. The Contractor may prepare a proposal as in paragraph 1.3 B and a change order may be negotiated as in paragraph 1.3 D.
- E. A change order shall be executed for the negotiated amount or for the Cost Reimbursement amount as appropriate.

1.5 UNIT PRICE

- A. The Owner may issue a change order for unit price at such prices as are set forth in the Contract.
- B. The Contractor will, upon presentation, affix his signature and proceed with the changed work.

***** END OF SECTION *****

SECTION 01041

PROJECT COORDINATION

1.0 GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Work Under Separate Contracts: Section 01010
- B. Cutting and Patching: Section 01045
- C. Field Engineering: Section 01050
- D. Preconstruction Conferences: Section 01210
- E. Progress Meetings: Section 01220
- F. Inspection Services: Section 01420

1.2 POLICY IN PRACTICE

- A. Engineer is the Owner's Advisor and Consultant:
 - 1. Inspection and Testing Laboratories are to furnish data and guidance only and may make no decisions involving changes in the Contract.
 - 2. All job located problems shall be handled through the Resident Engineer or Inspector.
- B. Owner's desires and instructions are to be channeled through the Engineer regarding all phases of the Contract.
- C. Contract related communication from Contractor shall be handled through the Engineer.
- D. Coordination of all subcontractors is the responsibility of the Contractor.
- E. Documents of the Contract are directed to the Contractor and not to the subcontractors involved.
- F. The Contractor is solely responsible for construction methods and the results thereof regardless of any advice, information, methodology or scheduling unless such advice, methodology or scheduling is written into the Contract or given in writing by the Engineer or the Owner.

1.3 COORDINATION OF TRADES AND SUBCONTRACTORS

- A. Coordination is the responsibility of the Contractor. He shall assure coordination with suppliers, electrical contractors, mechanical contractors and all trades to the end that:

1. All necessary equipment, work and structures are scheduled, installed and tested in proper sequence.
2. He shall assure that electrical and mechanical equipment, wiring and control equipment, piping and plumbing, grading and landscaping and all problems of supply, installation and scheduling are coordinated and that the relations of all elements are carried out in an orderly manner in accordance with the Contract.
3. Contractor shall coordinate all suppliers of equipment, controls and electrical supplies before submittal of shop drawings.

1.4 COORDINATION OF UTILITIES

- A. Contractor shall schedule and supply utilities as required in the Contract.

1.5 PUBLIC AGENCIES

- A. Contractor shall coordinate his schedule and activities with the Owner, the Engineer and various agencies involved as the necessity arises and as required by the Contract:

1. Power.
2. Water.
3. Sewer.
4. Electrical.
5. Other Utilities.
6. Police.
7. Fire.
8. Schools.
9. County or Borough.
10. City.
11. State.
12. Other public agencies.

1.6 FLUSHING AND DISINFECTION OF PIPELINES

- A. The Contractor shall consult the Engineer to coordinate pipeline flushing and disinfection operations with system demands. Notice to Engineer shall be made at least 36 hours in advance of the need.
1. Flows may be made up through a combination of system water and/or water from production wells.

*** END OF SECTION ***

SECTION 01043

JOB SITE ADMINISTRATION

1.0 GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Summary of Work: Section 01010
- B. Project Coordination: Section 01041
- C. Inspection Services: Section 01420
- D. Temporary Water: Section 01515
- E. Protection and Maintenance of Work and Property: Section 01545
- F. Traffic Regulation: Section 01570

1.2 REMOVAL OF DEBRIS, CLEANING, ETC.

- A. The Contractor shall at all times keep the construction area clean and orderly and upon completion of the work shall leave all buildings broom clean and all parts of the work clean and free of rubbish or excess material of any kind.
- B. Windows, doors, hardware, woodwork, fixtures, equipment, walls and floors shall be left clean and free of stains, paint or roofing splashes or other mars or defects.
- C. Upon completion, the site of all work or equipment and material storage areas shall be restored to substantially their original condition.
- D. Miscellaneous debris, rocks, etc., resulting from the work shall be removed and disposed of in a manner satisfactory to the Owner.
- E. The site shall be left in a clean and neat condition at the end of each work day.

1.3 TESTS

- A. Where the Specifications require work to be specifically tested or reviewed, it shall not be tested or covered up without timely notice to the Engineer of its readiness for inspection, unless the Engineer waives such notice.
- B. Should any such work be covered up without such notice, approval or consent, it must, if required by the Engineer, be uncovered for examination at the Contractor's expense.

- C. Where work is to be tested, all necessary equipment shall be set up and the work given a preliminary test so that any and all defects may be discovered and repaired prior to calling out the Engineer for the test.

1.4 OWNER MAY DETERMINE PRECEDENCE

- A. Whenever, in his opinion, it is necessary to do so, in order to insure proper completion of the Contract for construction and installation, the Owner shall determine the order of precedence and the time and season at which any portion or portions of the work shall be commenced and carried on.
- B. The Owner may schedule a sequence of the work when it is in locations where the Owner is doing other work by his own forces, or by other contract, or when other work may be affected by work under this Contract, in order that conflict may be avoided and the work under these Specifications be coordinated with that under other contracts or with other work being done in connection with or growing out of operations of the Owner.
- C. Nothing herein contained shall be taken to relieve the Contractor of any of his obligations or liabilities under this Contract.

1.5 COMMENCEMENT OF WORK ON PUBLIC AND PRIVATE RIGHT-OF-WAY

- A. Work shall not be started on any public or private right-of-way until clearance is given the Contractor by the Engineer.
- B. It will be the responsibility of the Contractor to comply with any special requirements of any permits or easements for the project acquired by the Owner.

* * * END OF SECTION * * *

SECTION 01045

CUTTING AND PATCHING

1.0 GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Summary of Work: Section 01010
- B. Project Coordination: Section 01041
- C. Demolition: Section 02050
- D. Pavement Repair and Resurfacing: Section 02575

1.2 METHODS

- A. Execute cutting (including excavating), fitting or patching of work, required to:
 - 1. Make several parts fit properly.
 - 2. Remove and replace defective work.
 - 3. Remove and replace work not conforming to requirements of Contract Documents.
 - 4. Install specified work in existing construction.
- B. Do not endanger any work by cutting or altering work or any part of it.
- C. Do not cut or alter work of another contractor.

1.3 SUBMITTALS

- A. Submit written notice to Engineer requesting consent to proceed prior to cutting which affects structural safety of project, or work of another contractor.
- B. Submit notice to Engineer, designating time work will be uncovered, to provide for observation.

1.4 PAYMENT FOR COSTS

- A. Contractor shall pay for all costs caused by ill-timed, unnecessary or defective work or work not conforming to Contract Documents, including costs for additional services of Engineer.

2.0 PRODUCTS

2.1 MATERIALS

- A. For replacement of work removed: Contractor shall comply with Specifications for type of work to be done.

3.0 EXECUTION

3.1 INSPECTION

- A. Inspect existing conditions of work, including elements subject to movement or damage during construction.

3.2 PREPARATION (PRIOR TO CUTTING)

- A. Provide shoring, bracing and support as required to maintain structural integrity of all portions of the project.

3.3 PERFORMANCE

- A. Execute fitting and adjustment of products to provide finished installation to comply with specified tolerances, and finishes.
- B. Execute excavating and backfilling as specified in Excavating and Backfilling.
- C. Restore work which has been cut or removed.

*** END OF SECTION ***

SECTION 01050

FIELD ENGINEERING

1.0 GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Inspection Services: Section 01420.

1.2 CONSTRUCTION STAKING

- A. Unless otherwise provided, the Contractor will stake out locations of the various parts of the work and provide himself with such lines and grades as are necessary, in his opinion, for the proper construction thereof.

1.3 GENERAL REQUIREMENTS

- A. The Contractor shall protect and preserve in their original position all stakes, points, or marks set for the work.
- B. If any stakes and markings are destroyed or defaced by the Contractor's operations before their use is ended, the full cost of replacing them will be at the Contractor's expense.
- C. The Contractor shall provide sufficient and safe facilities to enable the Contractor's surveyor to set the control points, together with such tools and materials and render such competent assistance as may be reasonably and customarily required.
- D. Working operations shall be suspended at different points for such brief and reasonable time as may be required for giving of lines and grades, taking measurements and making inspections. Such delays shall be considered incidental to the Contract and no additional compensation will be allowed.
- E. Any claim by the Contractor for extra compensation by reason of alterations or reconstruction work allegedly due to error in the Engineer's line and grade, will not be allowed unless the original control points set by the Engineer still exist, or unless other satisfactory substantiating evidence to prove the error is furnished to the Engineer.
- F. The Contractor shall transfer lines and grades from the points given to his own work at his own expense.
- G. Detailed staking will usually be done after clearing of right of way has been completed.

1.4 STAKES AND MARKS TO BE PRESERVED

- A. All marks, bench marks, reference points and stakes established by the Engineer to control construction of this project, shall be carefully preserved by the Contractor, and in case of their destruction by the Contractor or any of his employees, such stake will be replaced by the

Engineer at the Contractor's expense and the full cost of replacement will be borne by the Contractor.

- B. Where in the opinion of the Engineer, any section corner, section subdivision corner, plat, USC and GS, USGS or other official monument or bench mark is in danger of being disturbed by normal construction operations, it will be referenced by the Engineer and replaced by the Engineer after completion of all construction work. All costs in connection with the referencing and replacing of monuments shall be at the expense of the Owner.
- C. Any other monuments not referenced by the Engineer that are disturbed by construction operations shall be reset by the Contractor in accordance with recognized Engineering and Surveying practices at his expense. Property corners, fences and other indications of property lines shall be referenced by the Contractor prior to construction and reset after completion of the construction operations in accordance with recognized Engineering and Surveying practices at the expense of the Contractor. In the event that any of these items are not replaced by the Contractor, they shall be replaced by the Engineer and the cost of this work shall be billed to the Contractor by the Owner and such costs shall constitute a basis for a lien against the Contractor's work. In the event that the Contractor fails to pay such bill or bills by the 30th day of the month billed, then such payment may be handled in accordance with Article 19.8 of these General Conditions.

1.5 REQUIREMENTS FOR PIPELINES

- A. Where line and grade is carried by stringline in the case of pipeline construction, not less than three (3) points shall be in use at one time.
- B. Grades shall be checked by the Contractor and if the points do not line up, the work shall be immediately stopped, and the cause remedied before proceeding with the work. The Contractor shall not receive any additional payment for "standby time" while surveys are being checked.
- C. Other methods of transferring line and grade may be used providing that such methods can be checked by the Engineer at not less than three points in each section of pipe between manholes before backfilling is started. Permission to use any specific method will not relieve the Contractor of his responsibility to meet any requirement of other sections of this Specification.
- D. Line and grade shall be checked for each piece of pipe laid.

1.6 REQUIREMENTS FOR STRUCTURES

- A. Horizontal base line and bench mark will be provided by the Engineer.
- B. Contractor shall lay out the work from these points.

1.7 CONTRACTOR PROVIDED STAKES

- A. Staking when performed by Contractor shall be done by qualified licensed surveyors.

- B. Prior to the Contractor conducting any survey work, the Contractor shall submit to the Owner evidence of the qualifications of the person(s) he will assign to do the survey work for the project. The Owner reserves the right to disallow the person(s) selected by the Contractor for surveying if, in the Owner's opinion, the person is not qualified to do the work. The Contractor shall select another surveyor and submit qualifications to the Owner until a qualified person is approved by the Owner.
- C. Control points shown on the drawings or outlined in the Special Provisions shall be utilized to stake out the project. The Engineer will provide the Contractor with a copy of survey field notes, when appropriate.
- D. Field notes shall be kept in standard bound notebooks in a clear, orderly manner consistent with standard engineering practice including titles, numbering and indexing.
 - 1. The Contractor shall provide the Owner with a copy of all field notes including references to monuments and property corners.
 - 2. The Contractor shall provide the Engineer with copy of grade sheets, prior to construction work on any specific portion of the project.

*** END OF SECTION ***

SECTION 01070

ABBREVIATIONS AND SYMBOLS

1.0 GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. Definitions: General Conditions

1.2 ABBREVIATIONS

A. Whenever the following abbreviations are used on the plans, specifications, proposals and contracts, they shall be construed to mean the words and terms as listed below.

B. Duplicate Definitions shall be interpreted in context of use.

A

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AFBMA	Anti Friction Bearing Manufacturers Assoc.
AGA	American Gas Association
AGC	Associated General Contractors of America
AGMA	American Gear Manufacturer Association
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute
APWA	American Public Works Association
AREA	American Railway Engineering Association
ASAE	American Society of Agriculture Engineers
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWS	American Welding Society
AWWA	American Water Works Association

B

BTU	British thermal unit
BTUH	British thermal units per hour

C

C	Centigrade/Celsius
CBMA	Certified Ballast Manufacturers Association
CFM	Cubic feet per minute
CFS	Cubic feet per second
CPM	Critical path method
CRSI	Concrete Reinforcing Steel Institute

D

DFP	Douglas Fir Plywood Association
DIP	Ductile Iron Pipe
DIPRA	Ductile Iron Pipe Research Association

E

EA	Each
EEO	Equal Employment Opportunity
EPA	Environmental Protection Agency (Federal)

F

F	Fahrenheit
FED SPEC	Federal Specification
FHWA	Federal Highway Administration
FPM	Feet per minute
FT, FT ² , FT ³	Foot, square feet, cubic feet

G

GA	Gage, gauge
GAL	Gallon
GALV	Galvanized
GPD	Gallons per day

GPH	Gallons per hour	NBFU	National Bureau of Fire Underwriters
GPM	Gallons per minute	NEC	National Electrical Code
<u>H</u>		NEMA	National Electrical Manufacturers Association
HOA	Hand-off-auto	NESC	National Electric Safety Code
HP	Horsepower	NFPA	National Fire Protection Association
HR	Hour	NPC	National Plumbing Code
HT	Height	NPT	National pipe thread
Hz	Hertz	NRS	Non-rising stem
<u>I</u>		NLMA	National Lumber Manufacturers Association
ID	Inside Diameter	<u>O</u>	
IEEE	Institute of Electrical and Electronics Engineers	OD	Outside diameter
IN,IN ² ,IN ³	Inch, square inches, cubic inches	OECI	Overhead Electric Crane
IPCEA	Insulated Power Cable Engineers Association	OSHA	Occupational Safety and Health Act
ISA	Instrument Society of America	OZ	Ounce
<u>J</u>		<u>P</u>	
JIC	Joint Industry Conference of Hydraulic Manufacturers	PCA	Portland Cement Association
<u>K</u>		ph	Hydrogen ion concentration
KV	Kilovolt	PH	Phase
KVA	Kilovolt ampere	PPM	Parts per million
KVAR	Reactive kilovolt amperes	PSF	Pounds per square foot
KW	Kilowatts	PSI	Pounds per square inch
KWH	Kilowatt hours	PSIG	Pounds per square inch gauge
<u>L</u>		PT	Pint
L	Length	PVC	Polyvinyl chloride
LB	Pounds	<u>Q</u>	
LF	Linear feet	<u>R</u>	
LS	Lump Sum	RPM	Revolutions per minute
<u>M</u>		<u>S</u>	
M	Thousand	SAE	Society of Automotive Engineers
MA	Milliamperes	SAMA	Scientific Apparatus Manufacturers Association
MBTUH	One thousand British thermal units per hour	SBMWD	San Bernardino Municipal Water Department
MGD	Million gallons per day	SCFM	Standard cubic feet per minute
mgl	Milligrams per liter	SMACNA	Sheet Metal and Air Conditioning Contractors National Association
MIN	Minute	SQFT	Square foot
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry	SQIN	Square inch
MV	Millivolts	SQMI	Square mile
MVA	Megavolt amperes	SSPC	Steel Structures Painting Council
<u>N</u>		<u>T</u>	
NAMM	National Association of Metal Manufacturers	<u>U</u>	
		UBC	Uniform Building Code

UL Underwriter's Laboratory
UPC Uniform Plumbing Code

V
V Volt

W
WCLIB West Coast Lumber Inspection Bureau
WPCP Water Pollution Control Program
WWPA Western Wood Products Association

X

Y

***** END OF SECTION *****

SECTION 01090

REFERENCE STANDARDS

1.0 GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. All Divisions: As referenced

1.2 AUTHORITY

- A. Contractor is responsible to conform to all codes and regulations legally in effect at the location of the project.
- B. Contractor shall conform to all requirements and regulations of the authority administering such codes and regulations.

1.3 REFERENCE CODES

- A. Contractor shall conform to all codes and sections thereof as may be referred to in the specifications.
- B. Referenced codes are, by such reference, incorporated into this Contract as if set forth herein in full.

1.4 SPECIFICATIONS INCORPORATED BY REFERENCE

- A. Where Federal, AWWA, ASTM, or any other standard specifications are referred to, or included by reference, the latest issue and/or amendment thereto published at the date of issue of the Advertisement for Bids shall be incorporated in the Contract by said reference as if set forth herein in full.

*** END OF SECTION ***

SECTION 01210

PRECONSTRUCTION CONFERENCES

1.0 GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Summary of Work: Section 01010
- B. Project Coordination: Section 01041

1.2 SCHEDULE

- A. Not more than five days after notice to proceed but earlier if practicable, the Owner will schedule a preconstruction meeting.
- B. Present at the meeting to represent the Contractor shall be at least the official in charge of the project, the project superintendent, a representative with authority to speak for each of his principle subcontractors, and other representatives as he may deem expedient.
- C. The Owner and/or his representatives shall be present as required.
- D. Proceedings of meeting to be recorded and distributed to interested parties.

1.3 AGENDA

- A. Both Owner and Contractor shall be prepared to speak to the following:
 - 1. Name and Field Address of Job Superintendent
 - 2. Emergency Phone and/or operator
 - 3. Date of Construction Start
 - 4. Date of Notice to Proceed
 - 5. Notification of Utilities Concerned, Fire, Police, Schools, etc.
 - 6. Coordination with other contractors
 - 7. Permits: County, City, State Fisheries, Government Agencies as required
 - 8. Inspector: name, authority
 - 9. Field office (location)
 - 10. Shop Drawing Submittals
 - 11. Responsibility for lines and grades
 - 12. Minimum wage rates and posting of wage rate determination
 - 13. Equal employment opportunities and posting of EEO poster. Use of local labor.

14. Weekly payrolls when required
15. Schedule of Values
16. Periodic monthly payments including date for submittal
17. Construction progress schedule (bar graph or C.P.M.)
18. Safety Requirements and Special Hazards
19. Insurance and Bonds
20. Traffic Control
21. Construction Signs
22. Drawings revised to conform to construction records
23. Beneficial occupancy
24. Retention of Contract records
25. Guarantees and warranties
26. Operation and Maintenance Manuals
27. Non-Discrimination Notice
28. Project Signs
29. Testing
30. Progress Meetings
31. Complaint Procedure
32. Job Photos
33. Other matters concerning construction

*** END OF SECTION ***

SECTION 01310

CONSTRUCTION SCHEDULES

1.0 GENERAL

A. RELATED REQUIREMENTS SPECIFIED ELSEWHERE

1. Summary of Work: Section 01010
2. Project Coordination: 01041
3. Field Engineering: Section 01050
4. Progress Meetings: Section 01220
5. Material and Equipment: 01600

1.2 GRAPHIC SCHEDULE

- A. The Contractor shall submit not later than 30 days after notice of award, a schedule in graphic form showing proposed schedule of anticipated progress to include all major operations and items and time of anticipated completion of major portions of work. Electronic submission is preferred.
- B. The Contractor shall revise schedule on a bi-weekly basis and resubmit if there are any substantial deviations from previously submitted data.

1.2 CRITICAL PATH (CPM) (ALTERNATE)

- A. The Contractor may utilize a critical path (CPM) schedule instead of the graphic schedule specified herein providing it meets all applicable requirements specified herein.

1.3 CONTRACTOR TO SCHEDULE WORK

- A. The Contractor shall keep the Engineer informed sufficiently in advance of the time and places at which he intends to work in order that lines and grades may be furnished and the necessary measurements for record and payment may be made with the minimum of inconvenience and delay to both the Engineer and the Contractor.
- B. Requests for stakes shall be made at least 5 working days prior to the need to commence staking operations. Delays by reason of lack of stakes are deemed a risk to the Contractor and shall not be the basis for claims for additional compensation.
- C. If the schedule of work is such as to handicap the setting of necessary engineering controls, the Contractor shall suspend his operations at the particular place in sufficient time for the Engineer to complete his work during normal working hours. Any additional expense to the Contractor arising from temporary suspension of work shall be considered as incidental to the construction and be included in various bid items of the Contract.

1.4 FORM OF SCHEDULE (GRAPHIC SCHEDULE)

- A. Prepare in form of horizontal bar chart.
- B. Provide separate horizontal bar column for each trade or work activity.
- C. Order: Chronological order of beginning of each item of work.
- D. Identify each column by distinct graphic delineation.
- E. Horizontal time scale: Identify first work day of each half month.
- F. Scale and spacing: To allow space for updating.

1.5 SHEET SIZE

- A. Suitable for size and complexity of project.
- B. Preferably multipage 8 1/2 x 11 or 8 1/2 x 14.

1.6 CONTENTS OF SCHEDULES

- A. Provide complete sequence of construction by activity.
- B. Shop Drawings, Project Data, and Samples.
- C. Product procurement and delivery dates.
- D. Dates for beginning and completion of each element of construction.
- E. Identify work in phases or other logically grouped activities.
- F. Provide subschedules to define critical portions of entire schedule.
- G. Provide subschedules for all subcontractors.
- H. Show projected percentage of completion for each item of work as of the first day of each month.

1.7 UPDATING AND CHANGES

- A. Show all changes occurring since previous submission of updated schedule.
- B. Indicate progress of each activity, show completion dates.
- C. Include:
 - 1) Major changes in scope.

- 2) Activities modified since previous updating.
- 3) Revised projects due to changes.
- 4) Other identifiable changes.

D. Provide narrative report, including:

- 1) Discussion of problem areas, including current and anticipated delay factors, and their impact.
- 2) Corrective action taken or proposed, and its effect.
- 3) Effect of change in schedules of other contractors.
- 4) Description of revisions:
 - a. Effect on schedule due to change of scope.
 - b. Revisions in duration of activities.
 - c. Other changes that may affect schedule

1.8 SUBMITTALS BY CONTRACTOR

A. Submit initial schedule within 30 days of award.

1. Engineer will review schedules and return review copy within 10 days after receipt.
2. If required by the Engineer, resubmit within 7 days after return of review copy.

B. Submit by the 5th day of each month, updated schedules and project status accurately depicting progress to last day of the previous month.

C. If there are changes to the contract updated schedules shall be submitted bi-weekly.

1.9 DISTRIBUTION BY CONTRACTOR

A. Distribute copies of reviewed schedules to:

1. Job site file.
2. Other contractors.
3. Subcontractors.
4. Other concerned parties.

B. Instruct recipients to report any inability to comply and provide detailed explanation with suggested remedies.

2.0 PRODUCTS

NOT USED

3.0 EXECUTION

NOT USED

END OF SECTION

01310-4

Div 1

SECTION 01340

SHOP DRAWINGS, PROJECT DATA AND SAMPLES

1.0 GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Project Coordination: Section 01041
- B. Job Site Administration: Section 01243
- C. Construction Schedules: Section 01310
- D. Testing Laboratory Services: Section 01410
- E. Project Record Documents: Section 01720

1.2 SCHEDULE

- A. Prepare and submit with Construction Schedule a separate schedule listing dates for submission and dates that reviewed shop drawings, project data and samples will be needed.
- B. Fabrication of an item or construction work shall not start before the Engineer has taken action on the shop drawing submittal. Any work shall be entirely at the Contractor's risk.
- C. The Engineer will not accept for payment work performed by the Contractor which may be affected by materials, equipment, or methods of work not submitted in a timely manner so that final review can be accomplished before the affected work is complete.
- D. Incomplete shop drawings or submittal rejected by the Engineer shall not be basis for claim for delay.

1.3 SUBMITTALS

- A. Shop Drawings, data and samples shall be submitted attached to a form furnished by the Engineer entitled "Shop Drawing Transmittal". Location by drawing number and paragraph of specification shall be shown on the form for the product or material being submitted. Each transmittal shall be assigned a unique number in sequential order.
- B. Shop drawings shall be submitted and reviewed in the following manner:
 - 1. The Contractor shall review, stamp with his approval and submit postpaid with such promptness as to cause no delay in his work or in that of any other contractor, the required number of copies of all shop drawings, schedules, data, and samples required for the work of the various trades determined necessary by the Engineer, required in the General Conditions and/or described elsewhere in the Project Manual.
 - 2. Shop drawings shall establish the actual detail of all manufactured or fabricated items. All shall be drawn to scale and be completely dimensioned.

3. Sheet sizes of shop drawings shall be in multiples of 8-1/2 by 11 inches, preferably not exceeding 22 by 34 inches unless there is a special requirement for larger size sheets.
4. Provide on each drawing a clear space for the Engineer's and/or Owner's review and approval stamps and comments.
5. Four (4) copies of shop drawings, manufacturer's literature, brochures, catalog cuts, and other pertinent printed matter or data shall be submitted in addition to the number of copies the Contractor wishes returned to him.
6. Shop drawings may be submitted to the Engineer in the form of a reproducible transparency, along with one blackline or blueline print.
7. The Engineer shall review the shop drawings with reasonable promptness and will affix the Shop Drawing Review Stamp with notations thereon indicating "No Exceptions Taken", "Make Corrections Noted", "Amend and Resubmit", or "Reject See Remarks". He will then obtain the prints he requires from the transparency and forward it along with one marked up copy and the reviewed copies of the other material in excess of four to the Contractor.
8. When shop drawings and/or other submittals are required to be revised or corrected and resubmitted, the Contractor shall make such revisions and/or corrections and resubmit the drawings or other material in the same manner as specified above.
9. Contractor shall obtain and provide such number of prints or copies of drawings as is required for his field distribution.
10. It shall be the Contractor's responsibility to clearly note on the shop drawings, and in writing specifically call to the Engineer's attention, any changes that vary from the Contract Drawings and Specifications. No review of the shop drawings by the Engineer shall relieve the Contractor of full responsibility and at his own cost and expense to comply with the Contract Documents unless the changes are clearly noted and in writing called to the Engineer's attention as above provided, in which event subsequent acceptance by the Engineer in writing shall be authority for the change or changes proposed in the shop drawings.
11. If corrections are required, the Contractor shall make the corrections required by the Engineer and file with him the same number of corrected copies as indicated above. The Contractor shall direct specific attention in writing or, on resubmitted Shop Drawings to revisions other than the corrections requested on previous submissions. The Engineer will return to the Contractor copies of drawings in the same manner and number as before.
12. Shop Drawings shall give complete information necessary for the fabrication and installation of all component parts of the equipment, structure, facility, etc. In the case of structural drawings, they shall include the location, type, size and extent of all welds, if any are necessary. Manufacturer's standard details, catalogues, advertising literature, etc., shall not necessarily constitute all of the shop drawings required for any unit or facility. Additional shop details designed for the particular project shall be furnished when required by the Engineer. Shop drawings of electrical equipment shall include complete diagrams of electrical circuitry.
13. The Engineer's review of and placement of shop drawing review stamp on any shop drawing is understood to be an acceptance of the character of the details and not a check of any dimension or quantity and will not relieve the Contractor from responsibility for errors of any sort in shop drawings data or schedules, whether or not such errors are found by the Engineer in his review of such details.

14. The Engineer's review of and placement of Shop Drawing Review Stamp on any shop drawing will not relieve the Contractor of responsibility for consequences due to deviations from the Contract Documents unless the Contractor has called attention to such deviations in writing by a letter accompanying the drawings at the time of submission and the Engineer accepts such deviations in writing.
 15. No changes will be made in any drawing after it has been reviewed except by the consent or direction of the Engineer in writing.
- C. Samples shall be submitted in the same manner as shop drawings.
1. Samples to be physical examples to illustrate materials, equipment or workmanship, and to establish standards by which completed work is judged.
 - a. Office samples: of sufficient size and quantity to clearly illustrate:
 - (1) Functional characteristics of product or material, with integrally related parts and attachment devices.
 - (2) Full range of color samples.
 - (3) After review the Engineer will retain two samples and return the remainder to the Contractor.
 - b. Field samples and mockups
 - (1) Erect at project site location acceptable to Engineer
 - (2) Construct each required sample or mock-up complete, including work of all trades required in finished work.
 - (3) Coordinate sampling of natural materials with Field Engineer.
 2. If any test sample fails to meet the specification requirements, all previous approvals will be withdrawn and such materials or equipment, which fail the testing, shall be subject to removal and replacement by the Contractor with materials or equipment meeting the specification requirements.
 3. Affected finish work shall not be commenced until the Engineer has given written approval for the field samples.

1.4 CONTRACTOR RESPONSIBILITY

- A. Contractor shall review and approve shop drawings before submittal. Submittal directly from supplier or subcontractor will not be accepted.
- B. By approving and submitting Shop Drawings and Samples, the Contractor thereby represents that he has determined and verified all field measurements, field construction criteria, materials, catalog numbers and similar data, or will do so, and that he has checked and coordinated each Shop Drawing with the requirements of the Work and of the Contract Documents and that there is no conflict with other submittals that may affect the work of another contractor or the Owner.

- C. A copy of each approved shop drawing and each approved sample shall be kept in good order by the Contractor at the job site and shall be available to the Engineer.

1.5 LIMITATION

- A. Two submittals of each item requiring samples and/or shop drawings will be reviewed by the Engineer in the regular course of the Contract. However, all subsequent reviews of the same item over two will be reviewed at the expense of the Contractor unless the right to an additional review without charge was previously approved in writing by the Engineer. Contractor will be billed by the Owner at the Engineer's current established rates.

END OF SECTION

SECTION 01380

CONSTRUCTION PHOTOGRAPHS

1.0 GENERAL

1.1 REQUIREMENTS

- A. Unless otherwise specifically excepted, construction photographs will be required on the following projects.
 - 1. All pipelines on easements.
 - 2. All sewer projects.
 - 3. All projects other than pipelines with a contract price in excess of \$250,000.
- B. Photographs shall be 3" x 5" size or larger, glossy finish, in color and unmounted.
- C. All photographs shall be taken by the Contractor who shall coordinate his schedule with the Engineer.
- D. Each photograph shall be marked with date and identification.
- E. Each photograph must show flagged positions of route of pipeline and easement number.
- F. The preconstruction photographs shall be delivered to and approved by the Engineer, prior to beginning of construction.

1.2 PROJECTS OTHER THAN PIPELINES

- A. Contractor shall furnish a set of construction color photographs each month to show the general progress of construction.
- B. The first set of photographs shall be taken before the Contractor moves on the site and the last shall be taken after completion.
- C. Within three (3) days before or after the first day of the month, photographs shall be taken as follows:
 - 1. One panoramic view of the whole project.
 - 2. Enough shots of each structure to indicate the state of progress to date.
- D. Three (3) copies of the pictures shall be delivered to the Engineer by the 15th of the month they were taken.

1.3 PIPELINES

- A. A minimum of one preconstruction and one post-construction color photograph shall be taken of each lot or parcel of private property upon which sewer construction takes place.
- B. Final photographs shall be taken as nearly as possible from the same locations as the preconstruction photographs.

- C. At least one photograph on each sewer run from manhole to manhole.
- D. At least one photograph every 300 feet on pipelines other than sewer.
- E. On large lots or lots with extensive improvements several photographs shall be taken.
- F. One (1) file of all photographs shall be delivered to the Engineer and one (1) to the Owner.

* * * END OF SECTION * * *

SECTION 01410

TESTING LABORATORY SERVICES

1.0 GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Project Coordination: Section 01041
- B. Inspection Services: Section 01420
- C. Testing Requirements: Various Sections

1.2 BIOLOGICAL TESTING

- A. Biological tests required for disinfection of domestic water systems shall be performed by the San Bernardino Municipal Water Department.

1.3 SERVICES OF AN INDEPENDENT TESTING LABORATORY FOR:

- A. Soils gradation, moisture density standards determination, and in place density tests per Division 2.
- B. Concrete: Mix design, consistency, air content, yield, compressive test cylinder casting and compression testing per Section 03300.
- C. Mortar: Consistency, mix design, compressive test cylinder casting and compression testing, per Division 4.
- D. Other materials and/or workmanship specified in Divisions 2 through 16.
- E. Owner will pay for service of independent laboratory.

1.4 QUALIFICATION OF LABORATORY

- A. Meet basic requirements of ASTM E329, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction".
- B. Submit copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during most recent tour of inspection; with memorandum of remedies of any deficiencies reported by inspection.
- C. Testing Equipment:
 - 1. Calibrated at maximum 12 month intervals by devices of accuracy traceable to National Bureau of Standards.
 - 2. Submit copy of certificate of calibration, made by accredited calibration agency.

1.5 LABORATORY DUTIES, AUTHORITY AND LIMITATION

- A. Cooperate with Engineer and Contractor.
- B. Provide qualified personnel promptly on notice.
- C. Perform specified inspections, sampling and testing of materials and methods of construction:
 - 1. Comply with specified standards; ASTM, other recognized authorities, and as specified.
 - 2. Ascertain compliance with requirements of Contract Documents.
- D. Promptly notify Engineer, and Contractor, of irregularities or deficiencies of work which are observed during performance of services.
- E. Promptly submit 2 copies of report of inspections and tests to Engineer, in addition to those required by the Contractor including:
 - 1. Date issued.
 - 2. Testing Laboratory name and address.
 - 3. Name and signature of Inspector.
 - 4. Date of inspection of sampling.
 - 5. Record of temperature and weather.
 - 6. Date of test.
 - 7. Identification of product and specification section.
 - 8. Location in project.
 - 9. Type of inspection or test.
 - 10. Results of test.
 - 11. Observations regarding compliance with Contract Documents.
- F. Perform additional services as required.
- G. Laboratory is not authorized to:
 - 1. Release, revoke, alter, or enlarge on, requirements of Contract Documents.
 - 2. Approve or accept any portion of work.

1.6 RESPONSIBILITIES OF CONTRACTOR

- A. Pay for all re-tests resulting from failure to pass minimum requirement specified herein.
- B. Cooperate with laboratory personnel and provide access to work.
- C. Provide to laboratory, preliminary representative samples of materials to be tested in required quantities.
- D. Furnish copies of mill test reports.

- E. Furnish casual labor and facilities:
1. To provide access to work to be tested.
 2. To assist laboratory personnel to obtain and handle samples at the site.
 3. To facilitate inspections and tests.
 4. For laboratory's exclusive use for storage and curing of test samples.
- F. Notify laboratory sufficiently in advance of operations to allow for assignment of personnel and scheduling of tests.
- G. Laboratory Tests: Where such inspection and testing are to be conducted by an independent laboratory or agency, the sample or samples of materials to be tested shall be selected by such laboratory or agency, or the Engineer, and shipped to the laboratory by the Contractor at his expense.

*** END OF SECTION ***

SECTION 01420

INSPECTION SERVICES

1.0 GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

1. Testing Laboratory Services: Section 01410

1.2 AUTHORITY AND DUTIES OF INSPECTORS

1. Inspectors are placed on the work to keep the Project Engineer informed as to the progress of the work and the manner in which it is being done; to keep records; act as liaison between the Contractor and the Project Engineer; also to call the attention of the Contractor to any deviations from the Contract Documents, but failure of the Inspector to call to the attention of the Contractor to faulty work or deviations from the Contract Documents shall not constitute acceptance of said work.
2. The Inspector may reject or accept materials and equipment to be incorporated in the work and such specific items as he is authorized by the Engineer to accept.
3. When any material has been accepted by the Inspector, it passes from his control to the control of the Contractor and remains there until the job, as a whole, is complete. Since the Inspector cannot control how the material is used, the responsibility for its safety and proper use will be the Contractor's. Until the job is finally completed, the Contractor might do work that changes or modifies work previously done and even though at any given time a piece of work might be well done and acceptable in quality, the responsibility for keeping it in that condition until the job is completed is the sole responsibility of the Contractor. For this reason, it is impossible to accept, finally, any portion of a project until the project as a whole is acceptable and control of said project is withdrawn from the Contractor by final official written acceptance by the Owner.
4. Since one of the Inspector's primary interests is to see that work on the project progresses expediently and in a workmanlike manner, he may at various times offer suggestions to the Contractor which the Contractor may or may not follow, at his discretion. Such suggestions are never to be considered as anything but suggestions and involve no assumption of responsibility, financial or otherwise, by either the Inspector himself, the Engineer, or the Owner.
5. Any personal assistance which an Inspector may give the Contractor will not be construed as the basis of any assumption of responsibility in any manner, financial or otherwise, by the Inspector, the Engineer, or the Owner.
6. The Engineer is not and does not purport to be a Safety Engineer and is not engaged in that capacity by the Owner and shall have neither authority nor responsibility to enforce construction safety laws, rules, regulations, procedures or the safety of persons on and about the construction site.
7. The presence or absence of an Inspector on any job will be at the sole discretion of the Engineer, and such presence, or absence, of an Inspector will not relieve the Contractor of his responsibility to obtain the construction results specified in the Contract Documents.

8. The Inspector will not be authorized to approve or accept any portion of the work, to make changes in the work, or to issue instructions contrary to the Contract Documents, such approvals, acceptances, or instructions, when given, must be in writing and signed by the Project Engineer. The Inspector will have authority to reject defective material; however, the failure of the Inspector to reject defective material or any other work involving deviations from the Contract Documents will not constitute acceptance of such work.
9. Nothing in this subsection shall in any way be so construed as to require or to place responsibility for, the method, manner or supervision of the performance of the work under this Contract upon the Inspector, the Engineer, or the Owner. Such responsibility rests solely with the Contractor.

1.3 EXAMINATION OF MATERIALS

1. The neglect or failure on the part of the Engineer to condemn or reject substandard material or work shall not imply an acceptance of the materials or work. The Contractor shall furnish, at his own expense, such labor as may be required to enable the Engineer to make a thorough inspection and culling of the materials, and the Contractor shall bear the costs of all laboratory or other testing called for in these Specifications.
2. Where required by the Specifications, the Engineer will examine certain materials such as masonry materials, concrete, aggregates, etc., at the manufacturer's plant prior to their delivery to the job site. The Contractor shall bear the cost of such material inspection including the Inspector's time, travel time and transportation expense and any other costs incurred, or chargeable to, or by, such material inspection. These inspection costs shall be billed to the Contractor at the Engineer's current billing rate. Transportation expense shall be billed at current rate. All such material inspection charges will be billed directly to the Contractor by the Owner and said costs shall be a lien against the Contractor's work. If the Contractor fails to pay said bill, or bills, by the 30th day of the month billed, such payment may be withheld from monies due the Contractor.

1.4 CORRECTION, UTILIZATION OF DEFECTIVE WORK

A. REJECTED MATERIALS AND WORKMANSHIP

1. The Engineer shall have the right to reject materials and workmanship which are defective, or to require their correction. Rejected workmanship shall be satisfactorily corrected and rejected materials shall be removed from the premises without charge to the Owner. If the Contractor does not correct such rejected work within a reasonable time, fixed by written notice, the Owner may correct same and charge the expense to the Contractor.

B. REINSPECTION

1. Should it be considered necessary or advisable by the Engineer at any time before final acceptance of the entire work to make an examination of work already completed, by removing or tearing out any portion thereof, the Contractor shall on request promptly furnish all necessary facilities, labor and materials. If such work is found to be defective in any respect due to the fault of the Contractor or his Subcontractor, he shall defray all the expenses of

such examinations and satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the additional cost of labor and materials necessarily involved in such examination and placement shall be paid to Contractor as provided elsewhere.

C. UTILIZATION OF DEFECTIVE WORK

1. Should the Engineer and Owner decide that the defective work can be utilized, they may elect to make an equitable deduction rather than require correction. If corrections are ordered, such corrections of defective work shall be made to the Engineer's satisfaction before final payment is made, but final payment shall not be a waiver of the Owner's right to demand correction of faulty workmanship or material which becomes apparent during the guarantee period stipulated in this Contract.

D. OWNER MAY CORRECT DEFECTIVE WORK

1. If Contractor fails within a reasonable time after written notice from the Engineer to proceed to correct defective work or to remove and replace rejected work as required by Engineer in accordance with the terms and conditions of this contract, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven (7) days' written notice to Contractor, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph Owner shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, Owner may exclude Contractor from all or part of the site, take possession of all or part of the Work, and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the site and incorporate in the work all materials and equipment stored at the site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees such access to the site as may be necessary to enable Owner to exercise the rights and remedies under this Article. All direct, indirect and consequential costs of Owner in exercising such rights and remedies will be charged against Contractor in an amount approved as to reasonableness by Engineer, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the work: and Owner shall be entitled to an appropriate decrease in the contract price. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court or arbitration costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of Contractor's defective work. Contractor shall not be allowed an extension of the contract time because of any delay in performance of the work attributable to the exercise by Owner of Owner's rights and remedies hereunder.

* * * END OF SECTION * * *